## ABSTRACT

The present invention is a process for producing phenyl-alkanes by paraffin adsorptive separation followed by paraffin dehydrogenation and then by alkylation of a phenyl compound by a lightly branched olefin. The adsorptive separation step employs a silicalite adsorbent and, as the desorbent, a $C_5$-$C_8$ linear paraffin, a $C_5$-$C_8$ cycloparaffin, a branched paraffin such as isooctane, or mixtures thereof. The effluent of the alkylation zone comprises paraffins that are recycled to the adsorptive separation step or to the dehydrogenation step. This invention is also a process that that sulfonates phenyl-alkanes having lightly branched aliphatic alkyl groups that to produce modified alkylbenzene sulfonates. In addition, this invention is the compositions produced by these processes, which can be used as detergents having improved cleaning effectiveness in hard and/or cold water while also having biodegradability comparable to that of linear alkylbenzene sulfonates, as lubricants, and as lubricant additives. This invention is moreover the use of compositions produced by these processes as lubricants and lubricant additives.